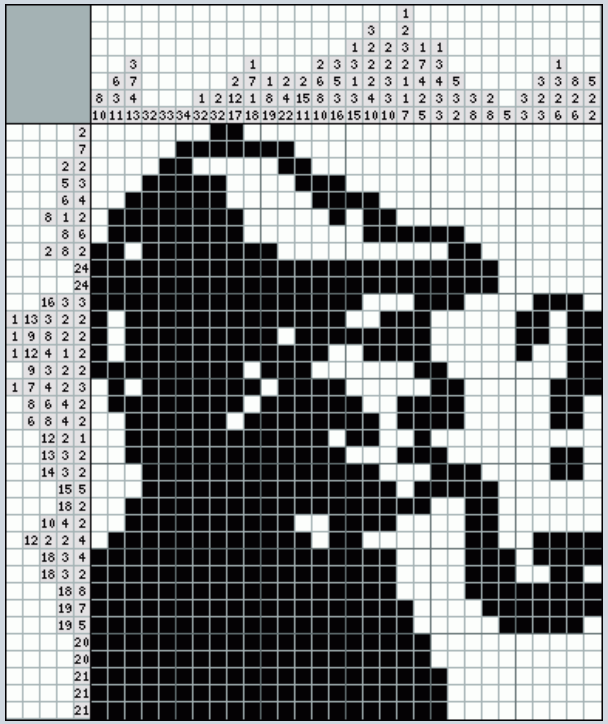

Picross Detective

MICHAEL SALTER

Image credit: japonskie.ru

Picross? (a.k.a. Nonograms, Hanjie, Griddlers, etc.)

- Grid-based logic puzzles
- Ideally the solution creates a nice picture
- 5x5 – 10x10 common for beginners (< 5 min)
- 15x15 – 50x50 common overall (5 min to several hours)
- 100x100+ rare

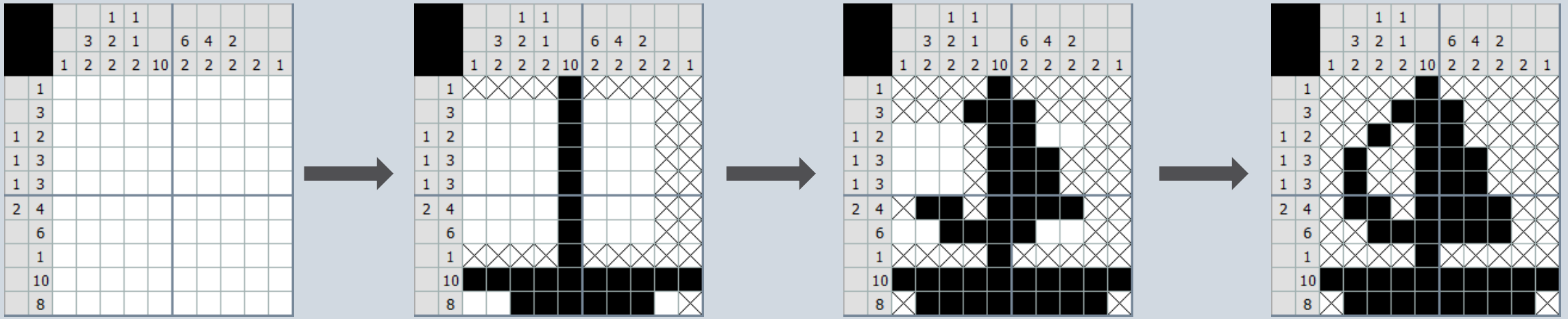

Image credit: japonskie.ru

What’s Picross Detective?

- Tool to solve picross puzzles
- Finds all possible solutions… eventually
- Puzzle entry by command line or by file
- Can save puzzle to file

Target Audience

Who are they?

- Picross puzzle authors
- Frustrated picross puzzle players
- Maladjusted loners and/or weirdos

How are their needs met?

- Allows entry of puzzles
- Finds solutions to puzzles
- Is entertaining to watch (when Human-like solving implemented)

https://raw.githubusercontent.com/salterm/PicrossDetective/master/presentation/PicrossDetective_Demo.mp4

The Competition

Solving it yourself:

- Pen and paper
- Web-platforms, mobile apps, handheld and console games, etc.

Having something else solve it:

- Web-based and downloadable solvers: myriad, many algorithms and implementations

Design Choices

Console application

- Easy to implement
- User interaction is mostly data entry
- Output is a formatted grid

"Random" Algorithm

- Easy naïve solution is pretty terrible
- "Best" is depth-first search of possible valid rows
- Some optimizations possible
- Slow (O(n^2))
- No idea when a solution will be found, no indicator of progress

"Human-like" Algorithm

- Very complicated
- Slower in general
- Can get stuck
- Returns partial results quickly for most puzzles

Hybrid Algorithm

- Slower
- Partial results early
- Always solves puzzle, eventually
- Even more complicated, but "glue" is minimal

Improvements

- GUI application
- Allow user to create and save puzzles graphically
- Connection to online puzzle database(s)
- Multiple puzzle colors
- Show solver progress / estimate
- Option to generate puzzle from an existing image (OpenCV?)
- Human-like logical solving
- Hybrid solving

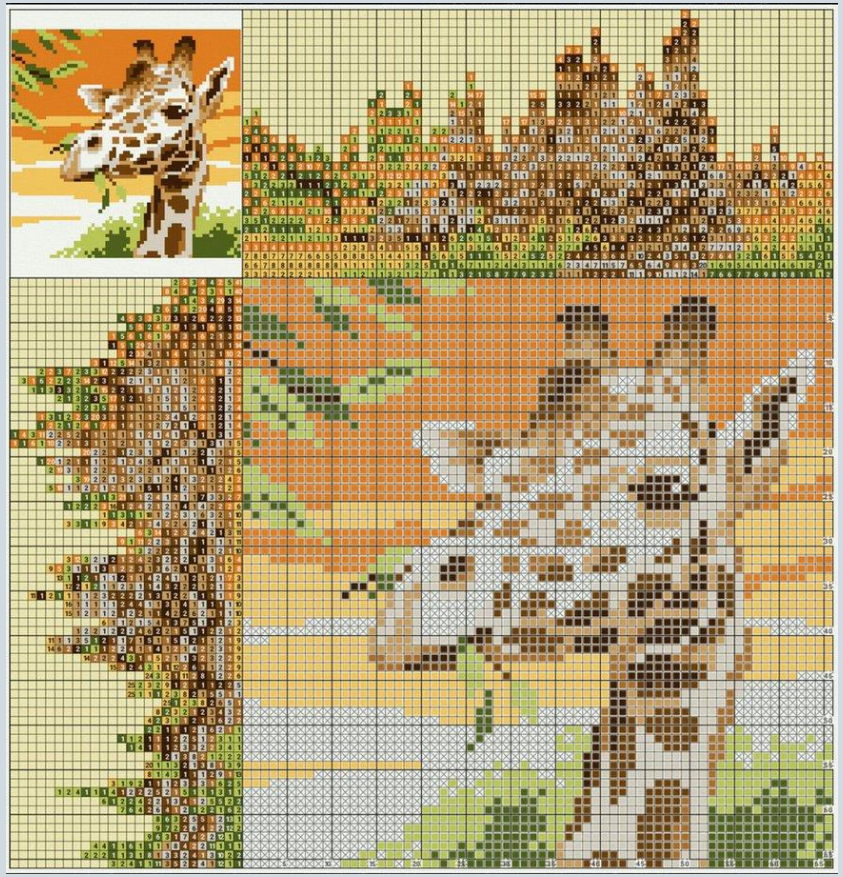

Image credit: doomdutch.deviantart.com

Contact

GitHub Repository:

https://github.com/salterm/PicrossDetective

Contact:

salterm@pdx.edu